



SEQUENCE LISTING

<110> Thomason, Arlen  
Liu, Benxian

<120> Fibroblast Growth Factor-Like Polypeptides

<130> 99,371

<140> 09/391,861

<141> 1999-09-07

<160> 41

<170> PatentIn Ver. 2.0

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<213> Homo sapiens

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<221> CDS

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Met Asp Ser Asp Glu Thr Gly Phe Glu His  
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tca gga ctg tgg gtt tct gtg ctg gct ggt ctt ctg ctg gga gcc tgc 219  
Ser Gly Leu Trp Val Ser Val Leu Ala Gly Leu Leu Leu Gly Ala Cys  
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Gln Ala His Pro Ile Pro Asp Ser Ser Pro Leu Leu Gln Phe Gly Gly  
30 35 40

caa gtc cgg cag cgg tac ctc tac aca gat gat gcc cag cag aca gaa 315  
Gln Val Arg Gln Arg Tyr Leu Tyr Thr Asp Asp Ala Gln Gln Thr Glu  
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gcc cac ctg gag atc agg gag gat ggg acg gtg ggg ggc gct gct gac 363  
Ala His Leu Glu Ile Arg Glu Asp Gly Thr Val Gly Gly Ala Ala Asp  
60 65 70

cag agc ccc gaa agt ctc ctg cag ctg aaa gcc ttg aag ccg gga gtt 411  
Gln Ser Pro Glu Ser Leu Leu Gln Leu Lys Ala Leu Lys Pro Gly Val  
75 80 85 90

att caa atc ttg gga gtc aag aca tcc agg ttc ctg tgc cag cgg cca 459  
Ile Gln Ile Leu Gly Val Lys Thr Ser Arg Phe Leu Cys Gln Arg Pro  
95 100 105

gat ggg gcc ctg tat gga tcg ctc cac ttt gac cct gag gcc tgc agc 507  
Asp Gly Ala Leu Tyr Gly Ser Leu His Phe Asp Pro Glu Ala Cys Ser  
110 115 120

ttc cgg gag ctg ctt ctt gag gac gga tac aat gtt tac cag tcc gaa 555  
Phe Arg Glu Leu Leu Leu Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu  
125 130 135

gcc cac ggc ctc ccg ctg cac ctg cca ggg aac aag tcc cca cac cgg 603  
Ala His Gly Leu Pro Leu His Leu Pro Gly Asn Lys Ser Pro His Arg  
140 145 150

gac cct gca ccc cga gga cca gct cgc ttc ctg cca cta cca ggc ctg 651  
Asp Pro Ala Pro Arg Gly Pro Ala Arg Phe Leu Pro Leu Pro Gly Leu  
155 160 165 170

ccc ccc gca ccc ccg gag cca ccc gga atc ctg gcc ccc cag ccc ccc 699  
Pro Pro Ala Pro Pro Glu Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro  
175 180 185

gat gtg ggc tcc tcg gac cct ctg agc atg gtg gga cct tcc cag ggc 747  
Asp Val Gly Ser Ser Asp Pro Leu Ser Met Val Gly Pro Ser Gln Gly  
190 195 200

cga agc ccc agc tac gct tcc tga agccagagggc tgtttactat gacatctcct 801  
Arg Ser Pro Ser Tyr Ala Ser  
205 210

ctttatttat taggttattt atcttattta tttttttatt tttcttactt gagataataa 861  
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tgttttgtct cccttggccc ggacaatccc ctctacacct cccctcacgt ggtccgaggg 981  
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Asp Ser Ser Pro Leu Leu Gln Phe Gly Gly Gln Val Arg Gln Arg Tyr

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 Leu Tyr Thr Asp Asp Ala Gln Gln Thr Glu Ala His Leu Glu Ile Arg  
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 Glu Asp Gly Thr Val Gly Gly Ala Ala Asp Gln Ser Pro Glu Ser Leu  
     65                      70                      75                      80  
 Leu Gln Leu Lys Ala Leu Lys Pro Gly Val Ile Gln Ile Leu Gly Val  
                     85                      90                      95  
 Lys Thr Ser Arg Phe Leu Cys Gln Arg Pro Asp Gly Ala Leu Tyr Gly  
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 Ser Leu His Phe Asp Pro Glu Ala Cys Ser Phe Arg Glu Leu Leu Leu  
                     115                      120                      125  
 Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His Gly Leu Pro Leu  
     130                      135                      140  
 His Leu Pro Gly Asn Lys Ser Pro His Arg Asp Pro Ala Pro Arg Gly  
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 Pro Ala Arg Phe Leu Pro Leu Pro Gly Leu Pro Pro Ala Pro Pro Glu  
                     165                      170                      175  
 Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro Asp Val Gly Ser Ser Asp  
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cct gac tcc agc ccc ctc ctc cag ttt ggg ggt caa gtc cgg cag agg      144  
 Pro Asp Ser Ser Pro Leu Leu Gln Phe Gly Gly Gln Val Arg Gln Arg  
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Tyr Leu Tyr Thr Asp Asp Asp Gln Asp Thr Glu Ala His Leu Glu Ile  
50 55 60

agg gag gat gga aca gtg gta ggc gca gca cac cgc agt cca gaa agt 240  
Arg Glu Asp Gly Thr Val Val Gly Ala Ala His Arg Ser Pro Glu Ser  
65 70 75 80

ctc ctg gag ctc aaa gcc ttg aag cca ggg gtc att caa atc ctg ggt 288  
Leu Leu Glu Leu Lys Ala Leu Lys Pro Gly Val Ile Gln Ile Leu Gly  
85 90 95

gtc aaa gcc tct agg ttt ctt tgc caa cag cca gat gga gct ctc tat 336  
Val Lys Ala Ser Arg Phe Leu Cys Gln Gln Pro Asp Gly Ala Leu Tyr  
100 105 110

gga tcg cct cac ttt gat cct gag gcc tgc agc ttc aga gaa ctg ctg 384  
Gly Ser Pro His Phe Asp Pro Glu Ala Cys Ser Phe Arg Glu Leu Leu  
115 120 125

ctg gag gac ggt tac aat gtg tac cag tct gaa gcc cat ggc ctg ccc 432  
Leu Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His Gly Leu Pro  
130 135 140

ctg cgt ctg cct cag aag gac tcc cca aac cag gat gca aca tcc tgg 480  
Leu Arg Leu Pro Gln Lys Asp Ser Pro Asn Gln Asp Ala Thr Ser Trp  
145 150 155 160

gga cct gtg cgc ttc ctg ccc atg cca ggc ctg ctc cac gag ccc caa 528  
Gly Pro Val Arg Phe Leu Pro Met Pro Gly Leu Leu His Glu Pro Gln  
165 170 175

gac caa gca gga ttc ctg ccc cca gag ccc cca gat gtg ggc tcc tct 576  
Asp Gln Ala Gly Phe Leu Pro Pro Glu Pro Pro Asp Val Gly Ser Ser  
180 185 190

gac ccc ctg agc atg gta gag cct tta cag ggc cga agc ccc agc tat 624  
Asp Pro Leu Ser Met Val Glu Pro Leu Gln Gly Arg Ser Pro Ser Tyr  
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Pro Asp Ser Ser Pro Leu Leu Gln Phe Gly Gly Gln Val Arg Gln Arg  
 35 40 45

Tyr Leu Tyr Thr Asp Asp Asp Gln Asp Thr Glu Ala His Leu Glu Ile  
 50 55 60

Arg Glu Asp Gly Thr Val Val Gly Ala Ala His Arg Ser Pro Glu Ser  
 65 70 75 80

Leu Leu Glu Leu Lys Ala Leu Lys Pro Gly Val Ile Gln Ile Leu Gly  
 85 90 95

Val Lys Ala Ser Arg Phe Leu Cys Gln Gln Pro Asp Gly Ala Leu Tyr  
 100 105 110

Gly Ser Pro His Phe Asp Pro Glu Ala Cys Ser Phe Arg Glu Leu Leu  
 115 120 125

Leu Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His Gly Leu Pro  
 130 135 140

Leu Arg Leu Pro Gln Lys Asp Ser Pro Asn Gln Asp Ala Thr Ser Trp  
 145 150 155 160

Gly Pro Val Arg Phe Leu Pro Met Pro Gly Leu Leu His Glu Pro Gln  
 165 170 175

Asp Gln Ala Gly Phe Leu Pro Pro Glu Pro Pro Asp Val Gly Ser Ser  
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Asp Pro Leu Ser Met Val Glu Pro Leu Gln Gly Arg Ser Pro Ser Tyr  
 195 200 205

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Leu Glu Ile Arg Glu Asp Gly Thr Val Gly Gly Ala Ala Asp Gln Ser  
 35 40 45

Pro Glu Ser Leu Leu Gln Leu Lys Ala Leu Lys Pro Gly Val Ile Gln  
 50 55 60

Ile Leu Gly Val Lys Thr Ser Arg Phe Leu Cys Gln Arg Pro Asp Gly  
 65 70 75 80

Ala Leu Tyr Gly Ser Leu His Phe Asp Pro Glu Ala Cys Ser Phe Arg  
85 95

Glu Leu Leu Leu Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His  
100 105 110

Gly Leu Pro Leu His Leu Pro Gly Asn Lys Ser Pro His Arg Asp Pro  
115 120 125

Ala Pro Arg Gly Pro Ala Arg Phe Leu Pro Leu Pro Gly Leu Pro Pro  
130 135 140

Ala Pro Pro Glu Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro Asp Val  
145 150 155 160

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Pro Ser Tyr Ala Ser  
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20 25 30

Leu Glu Ile Arg Glu Asp Gly Thr Val Val Gly Ala Ala His Arg Ser  
35 40 45

Pro Glu Ser Leu Leu Glu Leu Lys Ala Leu Lys Pro Gly Val Ile Gln  
50 55 60

Ile Leu Gly Val Lys Ala Ser Arg Phe Leu Cys Gln Gln Pro Asp Gly  
65 70 75 80

Ala Leu Tyr Gly Ser Pro His Phe Asp Pro Glu Ala Cys Ser Phe Arg  
85 90 95

Glu Leu Leu Leu Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His  
100 105 110

Gly Leu Pro Leu Arg Leu Pro Gln Lys Asp Ser Pro Asn Gln Asp Ala  
115 120 125

Thr Ser Trp Gly Pro Val Arg Phe Leu Pro Met Pro Gly Leu Leu His  
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Glu Pro Gln Asp Gln Ala Gly Phe Leu Pro Pro Glu Pro Pro Asp Val



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36

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<213> Homo sapiens

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20 25 30

Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly  
35 40 45

Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu  
50 55 60

Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu  
65 70 75 80

Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu  
85 90 95

Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr  
100 105 110

Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys  
115 120 125

Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala  
130 135 140

Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp  
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20 25 30

Pro Ser Lys Asp Gly Arg Ser Leu Cys Glu Arg His Val Leu Gly Val  
35 40 45

Phe Ser Lys Val Arg Phe Cys Ser Gly Arg Lys Arg Pro Val Arg Arg  
50 55 60

Arg Pro Glu Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Phe Ser Gln  
65 70 75 80

Gln Gly Tyr Phe Leu Gln Met His Pro Asp Gly Thr Ile Asp Gly Thr  
85 90 95

Lys Asp Glu Asn Ser Asp Tyr Thr Leu Phe Asn Leu Ile Pro Val Gly  
100 105 110

Leu Arg Val Val Ala Ile Gln Gly Val Lys Ala Ser Leu Tyr Val Ala  
115 120 125

Met Asn Gly Glu Gly Tyr Leu Tyr Ser Ser Asp Val Phe Thr Pro Glu  
130 135 140

Cys Lys Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser  
145 150 155 160

Ser Thr Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly  
165 170 175

Leu Asn Lys Glu Gly Gln Ile Met Lys Gly Asn Arg Val Lys Lys Thr  
180 185 190

Lys Pro Ser Ser His Phe Val Pro Lys Pro Ile Glu Val Cys Met Tyr  
195 200 205

Arg Glu Pro Ser Leu His Glu Ile Gly Glu Lys Gln Gly Arg Ser Arg  
210 215 220

Lys Ser Ser Gly Thr Pro Thr Met Asn Gly Gly Lys Val Val Asn Gln  
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Asp Ser Thr

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<213> Homo sapiens

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                             20                      25                      30  
 Pro Ser Lys Asn Arg Gly Leu Cys Asn Gly Asn Leu Val Asp Ile Phe  
                             35                      40                      45  
 Ser Lys Val Arg Ile Phe Gly Leu Lys Lys Arg Arg Leu Arg Arg Gln  
                             50                      55                      60  
 Asp Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Tyr Cys Arg Gln Gly  
                             65                      70                      75                      80  
 Tyr Tyr Leu Gln Met His Pro Asp Gly Ala Leu Asp Gly Thr Lys Asp  
                             85                      90                      95  
 Asp Ser Thr Asn Ser Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg  
                             100                      105                      110  
 Val Val Ala Ile Gln Gly Val Lys Thr Gly Leu Tyr Ile Ala Met Asn  
                             115                      120                      125  
 Gly Glu Gly Tyr Leu Tyr Pro Ser Glu Leu Phe Thr Pro Glu Cys Lys  
                             130                      135                      140  
 Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser Ser Met  
                             145                      150                      155                      160  
 Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly Leu Asn  
                             165                      170                      175  
 Lys Glu Gly Gln Ala Met Lys Gly Asn Arg Val Lys Lys Thr Lys Pro  
                             180                      185                      190  
 Ala Ala His Phe Leu Pro Lys Pro Leu Glu Val Ala Met Tyr Arg Glu  
                             195                      200                      205  
 Pro Ser Leu His Asp Val Gly Glu Thr Val Pro Lys Pro Gly Val Thr  
                             210                      215                      220  
 Pro Ser Lys Ser Thr Ser Ala Ser Ala Ile Met Asn Gly Gly Lys Pro  
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 Val Asn Lys Ser Lys Thr Thr  
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Tyr Cys Lys Asn Gly Gly Phe Phe Leu Arg Ile His Pro Asp Gly Arg  
 35 40 45

Val Asp Gly Val Arg Glu Lys Ser Asp Pro His Ile Lys Leu Gln Leu  
 50 55 60

Gln Ala Glu Glu Arg Gly Val Val Ser Ile Lys Gly Val Cys Ala Asn  
 65 70 75 80

Arg Tyr Leu Ala Met Lys Glu Asp Gly Arg Leu Leu Ala Ser Lys Cys  
 85 90 95

Val Thr Asp Glu Cys Phe Phe Phe Glu Arg Leu Glu Ser Asn Asn Tyr  
 100 105 110

Asn Thr Tyr Arg Ser Arg Lys Tyr Thr Ser Trp Tyr Val Ala Leu Lys  
 115 120 125

Arg Thr Gly Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln Lys  
 130 135 140

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Gly Gly Val Tyr Glu His Leu Gly Gly Ala Pro Arg Arg Arg Lys Leu  
 35 40 45

Tyr Cys Ala Thr Lys Tyr His Leu Gln Leu His Pro Ser Gly Arg Val  
 50 55 60

Asn Gly Ser Leu Glu Asn Ser Ala Tyr Ser Ile Leu Glu Ile Thr Ala  
 65 70 75 80

Val Glu Val Gly Ile Val Ala Ile Arg Gly Leu Phe Ser Gly Arg Tyr  
 85 90 95

Leu Ala Met Asn Lys Arg Gly Arg Leu Tyr Ala Ser Glu His Tyr Ser  
 100 105 110

Ala Glu Cys Glu Phe Val Glu Arg Ile His Glu Leu Gly Tyr Asn Thr  
 115 120 125

Tyr Ala Ser Arg Leu Tyr Arg Thr Val Ser Ser Thr Pro Gly Ala Arg  
130 135 140

Arg Gln Pro Ser Ala Glu Arg Leu Trp Tyr Val Ser Val Asn Gly Lys  
145 150 155 160

Gly Arg Pro Arg Arg Gly Phe Lys Thr Arg Arg Thr Gln Lys Ser Ser  
165 170 175

Leu Phe Leu Pro Arg Val Leu Asp His Arg Asp His Glu Met Val Arg  
180 185 190

Gln Leu Gln Ser Gly Leu Pro Arg Pro Pro Gly Lys Gly Val Gln Pro  
195 200 205

Arg Arg Arg Arg Gln Lys Gln Ser Pro Asp Asn Leu Glu Pro Ser His  
210 215 220

Val Gln Ala Ser Arg Leu Gly Ser Gln Leu Glu Ala Ser Ala His  
225 230 235

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<213> Homo sapiens

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20 25 30

Thr Ala Pro Asn Gly Thr Leu Glu Ala Glu Leu Glu Arg Arg Trp Glu  
35 40 45

Ser Leu Val Ala Leu Ser Leu Ala Arg Leu Pro Val Ala Ala Gln Pro  
50 55 60

Lys Glu Ala Ala Val Gln Ser Gly Ala Gly Asp Tyr Leu Leu Gly Ile  
65 70 75 80

Lys Arg Leu Arg Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe His Leu  
85 90 95

Gln Ala Leu Pro Asp Gly Arg Ile Gly Gly Ala His Ala Asp Thr Arg  
100 105 110

Asp Ser Leu Leu Glu Leu Ser Pro Val Glu Arg Gly Val Val Ser Ile  
115 120 125

Phe Gly Val Ala Ser Arg Phe Phe Val Ala Met Ser Ser Lys Gly Lys  
130 135 140

Leu Tyr Gly Ser Pro Phe Phe Thr Asp Glu Cys Thr Phe Lys Glu Ile



Gln His Ile Ser Thr His Phe Leu Pro Arg Phe Lys Gln Ser Glu Gln  
 210 215 220

Pro Glu Leu Ser Phe Thr Val Thr Val Pro Glu Lys Lys Asn Pro Pro  
 225 230 235 240

Ser Pro Ile Lys Ser Lys Ile Pro Leu Ser Ala Pro Arg Lys Asn Thr  
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Asn Ser Val Lys Tyr Arg Leu Lys Phe Arg Phe Gly  
 260 265

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Gly Met Val Val Pro Ser Pro Ala Gly Thr Arg Ala Asn Asn Thr Leu  
 35 40 45

Leu Asp Ser Arg Gly Trp Gly Thr Leu Leu Ser Arg Ser Arg Ala Gly  
 50 55 60

Leu Ala Gly Glu Ile Ala Gly Val Asn Trp Glu Ser Gly Tyr Leu Val  
 65 70 75 80

Gly Ile Lys Arg Gln Arg Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe  
 85 90 95

His Leu Gln Val Leu Pro Asp Gly Arg Ile Ser Gly Thr His Glu Glu  
 100 105 110

Asn Pro Tyr Ser Leu Leu Glu Ile Ser Thr Val Glu Arg Gly Val Val  
 115 120 125

Ser Leu Phe Gly Val Arg Ser Ala Leu Phe Val Ala Met Asn Ser Lys  
 130 135 140

Gly Arg Leu Tyr Ala Thr Pro Ser Phe Gln Glu Glu Cys Lys Phe Arg  
 145 150 155 160

Glu Thr Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Asp Leu Tyr  
 165 170 175

Gln Gly Thr Tyr Ile Ala Leu Ser Lys Tyr Gly Arg Val Lys Arg Gly  
 180 185 190

Ser Lys Val Ser Pro Ile Met Thr Val Thr His Phe Leu Pro Arg Ile  
 195 200 205

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 Asn Asp Met Thr Pro Glu Gln Met Ala Thr Asn Val Asn Cys Ser Ser  
 35 40 45  
 Pro Glu Arg His Thr Arg Ser Tyr Asp Tyr Met Glu Gly Gly Asp Ile  
 50 55 60  
 Arg Val Arg Arg Leu Phe Cys Arg Thr Gln Trp Tyr Leu Arg Ile Asp  
 65 70 75 80  
 Lys Arg Gly Lys Val Lys Gly Thr Gln Glu Met Lys Asn Asn Tyr Asn  
 85 90 95  
 Ile Met Glu Ile Arg Thr Val Ala Val Gly Ile Val Ala Ile Lys Gly  
 100 105 110  
 Val Glu Ser Glu Phe Tyr Leu Ala Met Asn Lys Glu Gly Lys Leu Tyr  
 115 120 125  
 Ala Lys Lys Glu Cys Asn Glu Asp Cys Asn Phe Lys Glu Leu Ile Leu  
 130 135 140  
 Glu Asn His Tyr Asn Thr Tyr Ala Ser Ala Lys Trp Thr His Asn Gly  
 145 150 155 160  
 Gly Glu Met Phe Val Ala Leu Asn Gln Lys Gly Ile Pro Val Arg Gly  
 165 170 175  
 Lys Lys Thr Lys Lys Glu Gln Lys Thr Ala His Phe Leu Pro Met Ala  
 180 185 190  
 Ile Thr

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 35 40 45  
 Pro Ala Val Thr Asp Leu Asp His Leu Lys Gly Ile Leu Arg Arg Arg  
 50 55 60  
 Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly  
 65 70 75 80  
 Thr Ile Gln Gly Thr Arg Lys Asp His Ser Arg Phe Gly Ile Leu Glu  
 85 90 95  
 Phe Ile Ser Ile Ala Val Gly Leu Val Ser Ile Arg Gly Val Asp Ser  
 100 105 110  
 Gly Leu Tyr Leu Gly Met Asn Glu Lys Gly Glu Leu Tyr Gly Ser Glu  
 115 120 125  
 Lys Leu Thr Gln Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp  
 130 135 140  
 Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Val Asp Thr Gly Arg  
 145 150 155 160  
 Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr  
 165 170 175  
 Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val  
 180 185 190  
 Asp Pro Asp Lys Val Pro Glu Leu Tyr Lys Asp Ile Leu Ser Gln Ser  
 195 200 205

<210> 24  
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 Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly  
 35 40 45



Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu  
50 55 60

Ser Ala Gly Glu Val Tyr Ile Lys Gly Thr Glu Thr Gly Gln Tyr Leu  
65 70 75 80

Ala Met Asp Thr Glu Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu  
85 90 95

Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr  
100 105 110

Thr Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys  
115 120 125

Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala  
130 135 140

Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp  
145 150 155

<210> 25  
<211> 245  
<212> PRT  
<213> Mus musculus

<400> 25  
Met Thr Ala Ala Ile Ala Ser Ser Leu Ile Arg Gln Lys Arg Gln Ala  
1 5 10 15

Arg Glu Arg Glu Lys Ser Asn Ala Cys Lys Cys Val Ser Ser Pro Ser  
20 25 30

Lys Gly Lys Thr Ser Cys Asp Lys Asn Lys Leu Asn Val Phe Ser Arg  
35 40 45

Val Lys Leu Phe Gly Ser Lys Lys Arg Arg Arg Arg Pro Glu Pro  
50 55 60

Gln Leu Lys Gly Ile Val Thr Lys Leu Tyr Ser Arg Gln Gly Tyr His  
65 70 75 80

Leu Gln Leu Gln Ala Asp Gly Thr Ile Asp Gly Thr Lys Asp Glu Asp  
85 90 95

Ser Thr Tyr Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg Val Val  
100 105 110

Ala Ile Gln Gly Val Gln Thr Lys Leu Tyr Leu Ala Met Asn Ser Glu  
115 120 125

Gly Tyr Leu Tyr Thr Ser Glu His Phe Thr Pro Glu Cys Lys Phe Lys  
130 135 140

Glu Ser Val Phe Glu Asn Tyr Tyr Val Thr Tyr Ser Ser Met Ile Tyr

145                      150                      155                      160

Arg Gln Gln Gln Ser Gly Arg Gly Trp Tyr Leu Gly Leu Asn Lys Glu  
                                165                      170                      175

Gly Glu Ile Met Lys Gly Asn His Val Lys Lys Asn Lys Pro Ala Ala  
                                180                      185                      190

His Phe Leu Pro Lys Pro Leu Lys Val Ala Met Tyr Lys Glu Pro Ser  
                                195                      200                      205

Leu His Asp Leu Thr Glu Phe Ser Arg Ser Gly Ser Gly Thr Pro Thr  
                                210                      215                      220

Lys Ser Arg Ser Val Ser Gly Val Leu Asn Gly Gly Lys Ser Met Ser  
225                                  230                      235                      240

His Asn Glu Ser Thr  
                                245

<210> 26  
<211> 247  
<212> PRT  
<213> Mus musculus

<400> 26  
Met Ala Ala Ala Ile Ala Ser Gly Leu Ile Arg Gln Lys Arg Gln Ala  
      1                      5                      10                      15

Arg Glu Gln His Trp Asp Arg Pro Ser Ala Ser Arg Arg Arg Ser Ser  
                                20                      25                      30

Pro Ser Lys Asn Arg Gly Leu Phe Asn Gly Asn Leu Val Asp Ile Phe  
                                35                      40                      45

Ser Lys Val Arg Ile Phe Gly Leu Lys Lys Arg Arg Leu Arg Arg Gln  
                                50                      55                      60

Asp Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Tyr Cys Arg Gln Gly  
                                65                      70                      75                      80

Tyr Tyr Leu Gln Met His Pro Asp Gly Ala Leu Asp Gly Thr Lys Asp  
                                85                      90                      95

Asp Ser Thr Asn Ser Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg  
                                100                      105                      110

Val Val Ala Ile Gln Gly Val Lys Thr Gly Leu Tyr Ile Ala Met Asn  
                                115                      120                      125

Gly Glu Gly Tyr Leu Tyr Pro Ser Glu Leu Phe Thr Pro Glu Cys Lys  
                                130                      135                      140

Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser Ser Met  
145                                  150                      155                      160

Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly Leu Asn  
 165 170 175

Lys Glu Gly Gln Val Met Lys Gly Asn Arg Val Lys Lys Thr Lys Pro  
 180 185 190

Ala Ala His Phe Leu Pro Lys Pro Leu Glu Val Ala Met Tyr Arg Glu  
 195 200 205

Pro Ser Leu His Asp Val Gly Glu Thr Val Pro Lys Ala Gly Val Thr  
 210 215 220

Pro Ser Lys Ser Thr Ser Ala Ser Ala Ile Met Asn Gly Gly Lys Pro  
 225 230 235 240

Val Asn Lys Cys Lys Thr Thr  
 245

<210> 27  
 <211> 154  
 <212> PRT  
 <213> Mus musculus

<400> 27  
 Met Ala Ala Ser Gly Ile Thr Ser Leu Pro Ala Leu Pro Glu Asp Gly  
 1 5 10 15

Gly Ala Ala Phe Pro Pro Gly His Phe Lys Asp Pro Lys Arg Leu Tyr  
 20 25 30

Cys Lys Asn Gly Gly Phe Phe Leu Arg Ile His Pro Asp Gly Arg Val  
 35 40 45

Asp Gly Val Arg Glu Lys Ser Asp Pro His Val Lys Leu Gln Leu Gln  
 50 55 60

Ala Glu Glu Arg Gly Val Val Ser Ile Lys Gly Val Cys Ala Asn Arg  
 65 70 75 80

Tyr Leu Ala Met Lys Glu Asp Gly Arg Leu Leu Ala Ser Lys Cys Val  
 85 90 95

Thr Glu Glu Cys Phe Phe Phe Glu Arg Leu Glu Ser Asn Asn Tyr Asn  
 100 105 110

Thr Tyr Arg Ser Arg Lys Tyr Ser Ser Trp Tyr Val Ala Leu Lys Arg  
 115 120 125

Thr Gly Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln Lys Ala  
 130 135 140

Ile Leu Phe Leu Pro Met Ser Ala Lys Ser  
 145 150

<210> 28

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<210> 29
<211> 202
<212> PRT
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<213> Mus musculus

<400> 29

Met Ala Lys Arg Gly Pro Thr Thr Gly Thr Leu Leu Pro Arg Val Leu  
1 5 10 15

Leu Ala Leu Val Val Ala Leu Ala Asp Arg Gly Thr Ala Ala Pro Asn  
20 25 30

Gly Thr Arg His Ala Glu Leu Gly His Gly Trp Asp Gly Leu Val Ala  
35 40 45

Arg Ser Leu Ala Arg Leu Pro Val Ala Ala Gln Pro Pro Gln Ala Ala  
50 55 60

Val Arg Ser Gly Ala Gly Asp Tyr Leu Leu Gly Leu Lys Arg Leu Arg  
65 70 75 80

Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe His Leu Gln Val Leu Pro  
85 90 95

Asp Gly Arg Ile Gly Gly Val His Ala Asp Thr Arg Asp Ser Leu Leu  
100 105 110

Glu Leu Ser Pro Val Gln Arg Gly Val Val Ser Ile Phe Gly Val Ala  
115 120 125

Ser Arg Phe Phe Val Ala Met Ser Ser Arg Gly Lys Leu Phe Gly Val  
130 135 140

Pro Phe Phe Thr Asp Glu Cys Lys Phe Lys Glu Ile Leu Leu Pro Asn  
145 150 155 160

Asn Tyr Asn Ala Tyr Glu Ala Tyr Ala Tyr Pro Gly Met Phe Met Ala  
165 170 175

Leu Ser Lys Asn Gly Arg Thr Lys Lys Gly Asn Arg Val Ser Pro Thr  
180 185 190

Met Lys Val Thr His Phe Leu Pro Arg Leu  
195 200

<210> 30

<211> 264

<212> PRT

<213> Mus musculus

<400> 30

Met Ser Leu Ser Leu Leu Phe Leu Ile Phe Cys Ser His Leu Ile His  
1 5 10 15

Ser Ala Trp Ala His Gly Glu Lys Arg Leu Thr Pro Glu Gly Gln Pro  
20 25 30

Ala Pro Pro Arg Asn Pro Gly Asp Ser Ser Gly Ser Arg Gly Arg Ser  
35 40 45

Ser Ala Thr Phe Ser Ser Ser Ser Ala Ser Ser Pro Val Ala Ala Ser  
50 55 60

Pro Gly Ser Gln Gly Ser Gly Ser Glu His Ser Ser Phe Gln Trp Ser  
65 70 75 80

Pro Ser Gly Arg Arg Thr Gly Ser Leu Tyr Cys Arg Val Gly Ile Gly  
85 90 95

Phe His Leu Gln Ile Tyr Pro Asp Gly Lys Val Asn Gly Ser His Glu  
100 105 110

Ala Ser Val Leu Ser Ile Leu Glu Ile Phe Ala Val Ser Gln Gly Ile  
115 120 125

Val Gly Ile Arg Gly Val Phe Ser Asn Lys Phe Leu Ala Met Ser Lys  
130 135 140

Lys Gly Lys Leu His Ala Ser Ala Lys Phe Thr Asp Asp Cys Lys Phe  
145 150 155 160

Arg Glu Arg Phe Gln Glu Asn Ser Tyr Asn Thr Tyr Ala Ser Ala Ile  
165 170 175

His Arg Thr Glu Lys Thr Gly Arg Glu Trp Tyr Val Ala Leu Asn Lys  
180 185 190

Arg Gly Lys Ala Lys Arg Gly Cys Ser Pro Arg Val Lys Pro Gln His  
195 200 205

Val Ser Thr His Phe Leu Pro Arg Phe Lys Gln Ser Glu Gln Pro Glu  
210 215 220

Leu Ser Phe Thr Val Thr Val Pro Glu Lys Lys Lys Pro Pro Val Lys  
225 230 235 240

Pro Lys Val Pro Leu Ser Gln Pro Arg Arg Ser Pro Ser Pro Val Lys  
245 250 255

Tyr Arg Leu Lys Phe Arg Phe Gly  
260

<210> 31

<211> 208

<212> PRT

<213> Mus musculus

<400> 31

Met Ala Leu Gly Gln Arg Leu Phe Ile Thr Met Ser Arg Gly Ala Gly  
1 5 10 15

Arg Val Gln Gly Thr Leu Gln Ala Leu Val Phe Leu Gly Val Leu Val  
20 25 30

Gly Met Val Val Pro Ser Pro Ala Gly Ala Arg Ala Asn Gly Thr Leu

35                      40                      45  
 Leu Asp Ser Arg Gly Trp Gly Thr Leu Leu Ser Arg Ser Arg Ala Gly  
     50                      55                      60  
 Leu Ala Gly Glu Ile Ser Gly Val Asn Trp Glu Ser Gly Tyr Leu Val  
     65                      70                      75                      80  
 Gly Ile Lys Arg Gln Arg Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe  
                     85                      90                      95  
 His Leu Gln Val Pro Pro Asp Gly Arg Ile Ser Gly Thr His Glu Glu  
                     100                      105                      110  
 Asn Pro Tyr Ser Leu Leu Glu Ile Ser Thr Val Glu Arg Gly Val Val  
                     115                      120                      125  
 Ser Leu Phe Gly Val Lys Ser Ala Leu Phe Ile Ala Met Asn Ser Lys  
     130                      135                      140  
 Gly Arg Leu Tyr Thr Thr Pro Ser Phe His Asp Glu Cys Lys Phe Arg  
     145                      150                      155                      160  
 Glu Thr Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Asp Leu Tyr  
                     165                      170                      175  
 Arg Gly Thr Tyr Ile Ala Leu Ser Lys Tyr Gly Arg Val Lys Arg Gly  
                     180                      185                      190  
 Ser Lys Val Ser Pro Ile Met Thr Val Thr His Phe Leu Pro Arg Ile  
     195                      200                      205

<210> 32  
 <211> 194  
 <212> PRT  
 <213> Mus musculus

<400> 32  
 Met Arg Lys Trp Ile Leu Thr Arg Ile Leu Pro Thr Leu Leu Tyr Arg  
     1                      5                      10                      15  
 Ser Cys Phe His Leu Val Cys Leu Val Gly Thr Ile Ser Leu Ala Cys  
                     20                      25                      30  
 Asn Asp Met Ser Pro Glu Gln Thr Ala Thr Ser Val Asn Cys Ser Ser  
     35                      40                      45  
 Pro Glu Arg His Thr Arg Ser Tyr Asp Tyr Met Glu Gly Gly Asp Ile  
     50                      55                      60  
 Arg Val Arg Arg Leu Phe Cys Arg Thr Gln Trp Tyr Leu Arg Ile Asp  
     65                      70                      75                      80

Lys Arg Gly Lys Val Lys Gly Thr Gln Glu Met Lys Asn Ser Tyr Asn  
85 90 95

Ile Met Glu Ile Arg Thr Val Ala Val Gly Ile Val Ala Ile Lys Gly  
100 105 110

Val Glu Ser Glu Tyr Tyr Leu Ala Met Asn Lys Glu Gly Lys Leu Tyr  
115 120 125

Ala Lys Lys Glu Cys Asn Glu Asp Cys Asn Phe Lys Glu Leu Ile Leu  
130 135 140

Glu Asn His Tyr Asn Thr Tyr Ala Ser Ala Lys Trp Thr His Ser Gly  
145 150 155 160

Gly Glu Met Phe Val Ala Leu Asn Gln Lys Gly Ile Pro Val Lys Gly  
165 170 175

Lys Lys Thr Lys Lys Glu Gln Lys Thr Ala His Phe Leu Pro Met Ala  
180 185 190

Ile Thr

<210> 33  
<211> 208  
<212> PRT  
<213> Mus musculus

<400> 33  
Met Ala Pro Leu Gly Glu Val Gly Ser Tyr Phe Gly Val Gln Asp Ala  
1 5 10 15

Val Pro Phe Gly Asn Val Pro Val Leu Pro Val Asp Ser Pro Val Leu  
20 25 30

Leu Asn Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly  
35 40 45

Pro Ala Val Thr Asp Leu Asp His Leu Lys Gly Ile Leu Arg Arg Arg  
50 55 60

Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly  
65 70 75 80

Thr Ile Gln Gly Thr Arg Lys Asp His Ser Arg Phe Gly Ile Leu Glu  
85 90 95

Phe Ile Ser Ile Ala Val Gly Leu Val Ser Ile Arg Gly Val Asp Ser  
100 105 110

Gly Leu Tyr Leu Gly Met Asn Glu Lys Gly Glu Leu Tyr Gly Ser Glu  
115 120 125

Lys Leu Thr Gln Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp  
130 135 140



Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Val Asp Thr Gly Arg  
 145 150 155 160  
 Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr  
 165 170 175  
 Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val  
 180 185 190  
 Asp Pro Asp Lys Val Pro Glu Leu Tyr Lys Asp Ile Leu Ser Gln Ser  
 195 200 205

<210> 34  
 <211> 33  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Random primer  
 with Not I restriction site for first strand cDNA  
 synthesis

<220>  
 <221> misc\_feature  
 <222> (25)..(33)  
 <223> "N" can be A, G, C, or T

<400> 34  
 ggaaggaaaa aagcggccgc aacannnnnn nnn

33

<210> 35  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer for  
 first strand cDNA synthesis

<400> 35  
 aatccgatgc ccacgttgca gta

23

<210> 36  
 <211> 26  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: PCR primer for  
 amplification of cDNA

<400> 36  
aaaatcttag accgacgact gtgttt 26

<210> 37  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer for  
amplification of cDNA

<400> 37  
gagtctccgc agccttttga gg 22

81  
<210> 38  
<211> 34  
<212> DNA  
<213> Homo sapiens

<400> 38  
actggcggcc gcaggcatca tcccagttga ggag 34

<210> 39  
<211> 36  
<212> DNA  
<213> Homo sapiens

<400> 39  
actggtcact cgagggtacc ttagctagcc cccggg 36

<210> 40  
<211> 29  
<212> PRT  
<213> Mus musculus

<400> 40  
Met Glu Trp Met Arg Ser Arg Val Gly Thr Leu Gly Leu Trp Val Arg  
1 5 10 15  
Leu Leu Leu Ala Val Phe Leu Leu Gly Val Tyr Gln Ala  
20 25

<210> 41  
<211> 28  
<212> PRT  
<213> Homo sapiens

<400> 41  
Met Asp Ser Asp Glu Thr Gly Phe Glu His Ser Gly Leu Trp Val Ser  
1 5 10 15

B<sup>1</sup>

Val Leu Ala Gly Leu Leu Leu Gly Ala Cys Gln Ala  
20 25

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